GLOSSARY

ABBREVIATIONS AND ACRONYMS

amp	ampere
assy	assembly
aux	auxiliary
brgs	bearings
byp	bypass
comb	combining
CPC	corrosion-preventive compound
det	detector
eng	engine
fwd	forward
Hz	hertz
ind	indicator
in-lb	inch-pound
ips	inches per second
LH	left hand
MA	mechanical advantage
maint	maintenance
max	maximum
MPH	miles per hour
NDI	nondestructive inspection
pnl	panel
pos	positive
press	pressure
psi	pounds per square inch
r	radius
RH	right hand
RPM	revolutions per minute
sw	switch
temp	temperature
trans	transmission
2/rev	two per revolution
v	velocity
VDC	voltage direct current
xducer	transducer
xmsn	transmission
xmtr	transmitter

DEFINITIONS

Airfoil. Any surface such as an airplane wing, aircraft propeller, helicopter rotor blade or rudder, or aileron designed to obtain reaction from the air through which it moves. Any member or surface whose major function is to deflect airflow.

Airfoil profile. Outline of an airfoil section.

Airfoil section. Cross section of an airfoil parallel to the plane symmetry or to a specific reference plane.

Airworthy. Status of being in a condition suitable for safe flight.

Angle, blade. Acute angle between the chord of a section of propeller or rotor blade and a plane perpendicular to the axis of rotation.

Angle of attack. Acute angle measured between the chord of an airfoil and the relative wind.

Angle, pitch. Acute angle between the blade chord line and a referenced plane determined by the main rotor hub.

Aspect ratio. Ratio of the span to the airfoil; ratio of the span to the total area of the airfoil (span divided by chord).

Bending. Combination of tension and compression; inside curve is under compression and outside is under tension.

Blade feathering. Twisting movement of rotor blades about the pitch-change axis; the streamlining of propeller blades with the relative wind.

Blade leading and lagging. Sometimes called hunting, the movement of rotor blades in the plane of rotation when approaching and leaving the pure radial position (90° to the helicopter longitudinal axis on the advancing half of the rotor disc). Blades lead when moving away from the pure radial position; they lag when approaching pure radial position. Leading and lagging is caused by increase and decrease in drag on the blades. It is limited by hydraulic dampers on fully articulated rotor systems and by rigidity of blades on all other types.

Blade shank. Base end of a propeller blade, which must be thick to withstand bending and torque forces; usually cylindrically shaped.

Blade slip. Difference between effective and geometric pitch.

Blade station. Term used to identify specific areas of a propeller or rotor blade along the span. Most blade stations are numbered in inches from the center of rotation (station zero) and outward to the blade tip.

Blade tip. Portion of a propeller or rotor blade furthest from the center of rotation; least critical area of the blade.

Blade tracking. Procedures used to check a propeller or rotor system to determine the tip-path plane of each blade when rotating. Desired track is for all blades to rotate on the same tip-path plane.

Camber. Curvature of airfoil surfaces from the chord line; may be positive, negative, or zero.

Center of gravity. Point within an airplane or airfoil (blade) through which, for balance purposes, the total force of gravity is considered to act.

Center of pressure. Aerodynamic center of an airfoil; the point where all resultant forces act.

Centrifugal twisting moment. Force which tends to streamline rotating blades with the plane of rotation.

Chord. Distance between the leading and trailing edges of an airfoil.

Chord line. Imaginary line drawn between the leading and trailing edges of an airfoil.

Compression. The resistance to pushing together or crushing produced by two forces moving toward each other.

Dissymmetry of lift. Uneven distribution of lift in the rotor disc area normally encountered in forward flight of a helicopter; caused by the increased velocity of the advancing half of the rotor disc creating more lift, and the decreased velocity of the retreating half reducing lift.

Drag, parasite. Drag caused by any member or structure which does not contribute to lift; for example, engine cowlings.

Drag, profile. Friction resistance produced by a member moving through the air; in simple terms, the "stickiness" of air against the surface of an airfoil.

Dynamic load. Load on an aircraft due to a dynamic force.

Effective angle of attack. That part of a given angle of attack that lies between the chord of an airfoil and a line representing the resultant velocity of the disturbed airflow.

Fatigue. Weakening of metal or other material due to microscopic changes in molecular structures caused by vibration or exposure.

Feedback. Relay through the controls of aerodynamic forces exerted on control surfaces and felt by the pilot.

Fillet. Faired surface or piece that smoothes the flow of air at an internal angle, as at a wing root.

Flapping. Up-and-down motion of a rotor blade.

Flapping angle. Angle that measures the extent of flapping in a rotor blade.

Ground effect. Cushion or pushing effect of air compressed against the ground by a helicopter or airplane hovering or flying close to the ground.

High lift blade. Rotor blade designed to give greater lift than commonly used blades.

Hub tilting. Tilting of the rotor hub of a helicopter or autogyro.

Hydromatic. Pertaining to hydraulically operating mechanisms that function automatically.

Induced angle of attack. That part of any given angle of attack over and above the effective angle of attack.

Induced drag. That part of the total drag on an aircraft induced by the airflow about the lifting surfaces.

Induced flow. Downward flow of air induced through a rotor by the rotation of the rotor blades.

In-plane motion. Oscillating motion occurring in the plane of a rotor disc about the drag hinge.

Lag angle. Angle by which a rotor blade is displaced about its drag hinge; measured between the blade-span axis and a radial line taken across the rotor disc and containing the drag hinge and the axis of rotation.

Leading edge. Edge of an airfoil (wing, propeller, or stabilizer) that first meets or bites the air.

Main rotor. Main system of rotating airfoils on a helicopter; distinguished from tail rotor.

Mean aerodynamic chord. Chord of an assumed rectangular airfoil representing the mean chord of an actual airfoil.

Mean blade-width ratio. Ratio of the mean chord of a propeller to its diameter.

Open storage. Storage of certain material outdoors; material so stored.

Plane of rotation. Hypothetical reference plane described or occupied by rotating rotor blades of a helicopter or autogyro, assuming the blades remain perpendicular to their axis of rotation at all times.

Plane of rotor disc. Plane of rotation.

Planform. Form or shape of an object, as of an airfoil, as seen in plain view or from above.

Reduction gear. Gear assembly between a powered shaft and another shaft by which the latter shaft is driven at lower RPM than the powered shaft.

Retreating blade. Rotor blade moving 180° from upwind to downwind position.

Reverse-flow region. Place on a rotor disc where flow through the disc is opposite to normal direction of flow.

Rib. Chordwise structural member in an airfoil which gives it its form and transmits the load from the airfoil covering to the spars.

Rotary wing. Rotating lifting surface of a helicopter or autogyro.

Rotational speed. Speed at which a propeller, rotor, or some other rotating part rotates, measured in revolutions per minute.

Rotor blade area. Planform area of a given rotor blade, equal to its length times its mean chord.

Rotor disc. Space occupied or described by the rotating blade of a rotor.

Span. Maximum dimension of an airfoil from tip to tip or from root to tip.

Spar. Any principal structural member in an airfoil, running from tip to tip or root to tip.

Static balanced surface. Surface that is in balance about its hinge axis.

Swash plate. Rotating member, usually circular, set on a shaft and acting like a cam.

Tip-path plane. Plane in which rotor blade tips travel when rotating.

Tip speed. Rotative speed of a propeller or rotor at its blade tips.

Trailing edge. Edge of an airfoil over which the airflow passes last.

Translational lift. Lift force exerted on the rotor blades of a helicopter when increased speed is imparted to the blades or when their angle of attack is changed going from one type of flight to another, such as from hovering to forward flight.

Unfeather. To change the blade angle of a propeller.

Vertical axis. Axis of the conical surface described by the rotating blades of a rotary wing.

Volatile. Easily passing away by evaporation; explosive.